The Builder.

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SATURDAY, JUNE 22, 1850.

SOME time ago we stated broadly the conclusions which the General Board of Health had arrived at in their Report on the supply of water to the metropolis, signed, "Carlisle, Ashley, Edwin Chadwick, and T. Southwood Smith." This Report contains a large mass of information, set forth in 325 closely-printed pages, relating as well to drainage as to the more prominent object of inquiry, and we propose now to turn over the leaves and condense for the advantage of our readers some of the more salient statements, without seeking to connect them. According to the returns made, the water companies supply 270,581 private houses; and as the total number of houses returned under the income-tax assessments for the metropolis is 288,037, there appear to be 17,456 houses unsupplied with water. Previous inquiries serve to show that the number is even much larger. The daily quantity of water, according to the same returns, pumped into the metropolis, is upwards of 44,000,000 gallons, or more than would form a lake equal to the area of St. James's-park 30 inches deep. It could be delivered in twenty-four hours by a brook 9 feet wide and 3 feet deep, running at the rate of a little more than 2 miles per hour: three sewers of 3 feet in diameter, having a proper fall, would suffice for its removal when soiled, a fact which of course bears materially on the question of size of sewers.

The miserable condition of the poorer classes in respect of water is shown forcibly, both as to the want of any, and the badness of the water where they have it. Mr. Chalice, a surgeon, asserts positively, with reference to the connection between bad water and the cholera, that in parts of Bermondsey, where deep spring water alone was used, and where such water was free from the effect of percolation from the drainage, persons escaped the cholera altogether.

Amongst the evils of an intermittent supply entailing the storing of water in vessels, must be placed the fact (made evident during this inquiry), that *water exposed to an impure and noxious atmosphere, absorbs noxious and impure matters, and thus becomes injurious to health.*

We have at various times had occasion to speak of the effect of water on lead, with the injurious results of the infusion on the system, and have pointed out that pure water had a more powerful action on lead pipes and cisterns than impure. This has been urged, it appears, by some of the witnesses, who would keep the supplies "hard," as they are. The Report says:—

"There can be no doubt of the more powerful action of soft water upon lead under given circumstances, which circumstances, however, we find, from experience on a large scale, seldom or never occur under a proper system of distribution. Some fatal accidents have been occasioned by the fall of leaves in leaden gutters and cisterns, the infusion of which appears to have caused powerful decomposition. The use of lead piping and lead cisterns has long been objected to, and the remedy would be the disuse of that metal. Iron piping is altogether better and cheaper than lead, and may now, it appears, at no great additional expense, be protected from oxidation by an earthenware glaze. But for the *obstinate prejudice of professional men and builders in favour of the most expensive materials*, earthenware would have been manufactured and used for the distribution of water. It was so used by the Romans. Vitruvius recommends it as far preferable to lead: he shows that it was used for the distribution of water up to 100 feet of pressure."

"Professional men and builders" are with difficulty moved into a new course; but the *motive* for adherence to the old course here suggested is a wrong one: this is an error which has been long entertained and acted on by the able writer of the Report before us.

A witness from Paisley, where soft water has been introduced, says that corrosion in pipes takes place only under the intermittent supply, by the action of the atmosphere on the pipe in a damp state; and that an iron pipe constantly charged will not corrode at all, whether the water be hard or soft, and will last at least four times as long as a pipe where the air is admitted into it.

Other witnesses corroborate the fact that, with some waters, the wear of pipes by the intermittent supplies is frequently very rapid, the rationale being, that oxidation takes place whilst the pipe is empty, and that the oxide is swept away by the return of the water.

Professor Clark shows that accidents from the contamination of lead may be prevented by simple filtration. At a marine villa belonging to Lord Aberdeen, some of the servants suffered in health from lead in water derived from pipes. Sand filters were put up under his direction, and the result was satisfactory.

"I hold it in all cases (says the witness) to be dangerous to allow water to pass through any considerable length of lead pipes, or to allow water to remain for a long time even in short pipes. In the case of the marine villa before alluded to, the water came a considerable distance through lead pipes; I suppose above a quarter of a mile. The water in Aberdeen is brought from the iron mains in the streets into the houses by means of lead pipes; and in general without any disadvantage, because the supply from the pipes is constant, and the use of the stop-cock very frequent in a family."

To learn the difference of effect in cooking of hard and soft water, the Board called in M. Soyer, whose statements were very decisive. The result is to the effect, that by the use of Thames water *one-third more tea* is used in the metropolis than would be the case if the water were soft; and that in cooking generally soft water would effect great saving.

The "washing-day" is an annoyance appreciated by large masses of not merely the lower, but the middle classes,—an annoyance affecting happiness, comfort, health. The cost of this, in the aggregate, will startle those who consider it for the first time. This expense is greatly increased by the waste of soap occasioned by hard water; and to make this clear, some curious particulars are given in the Report, showing, first, the largeness of the item *washing* in a family's expenditure. In families of the middle class, the cost of washing amounts often to nearly one-twelfth or one-thirteenth of their income.

"The waste amounts to 25½ ozs. of soap in the use of each 100 gallons of water of 16 degrees of hardness, over and above that which would be required with a water of 4 degrees of hardness; or, with the price of soap at 5d. the pound, causes an extra cost of 8d. on each 100 gallons, or 6s. 8d. on each 1,000 gallons; being more than 20 times the first cost of an economic water-supply, as furnished in several towns, or as might be furnished to the metropolis, allowing 7½ per cent. for the use of the capital required."

Mr. John Bullar arrives at the conclusion that the washing bills of London are nearly one shilling a week a head, or 5,000,000*l.* a year.

"The washing expenses of a middle-class family, inhabiting a house rented at 120*l.* a-year, and rated (high) at 100*l.* a-year, consisting of husband and wife, three children, and three servants, may be taken at not less than 20s. a-week, or more than half the rated rental; and from all that I have been able to learn, the proportion which washing expenses bear to rent is much greater in those families whose income is large enough to free them from the necessity of studying economy in matters of ordinary domestic expenditure. It is said that the average yearly value of the houses in London assessed under the Income-Tax is 40*l.*; and that the average number of persons to every inhabited house in London is 7·4. At one shilling a-week a-head the washing-bills of the persons inhabiting each of these houses would be within a very small fraction of 20*l.* a-year."

Returns show that the quantity of soap annually consumed in the kingdom is equal to seven-and-a-half pounds for each individual, and may be put at 3s. 4d. for each individual. Professor Clark comes to the conclusion that in London alone, a hard-water district, the consumption of each person is equal to about double this, or 6s. 8d.

From 800 to 1,000 tons of soap are used in London per month.

"If the importance of what is politically called an 'interest' be measured by the aggregate amount of the expenditure involved in it, then the washerwoman's interest is larger than the chief manufacturing interest of the country—the cotton and linen manufactures,—(at least as far as the home market is concerned)—inasmuch as far more money is expended in washing clothes than in the manufacture of the fabric or of the clothes themselves."

If we burnt our smoke, got rid of the dust in the streets, and obtained soft water, an amount of startling largeness would be annually saved to the Londoners, their clothes would wear longer, and the poor would not be driven to the dirt-concealing and evil-producing garments to which they have been forced.

At the Bolton Union, softening the water from five and a half degrees of hardness (or one-third the hardness of Thames water) to two degress of hardness reduced the expense of soap and ashes from 2*l.* 10s. 1d. weekly to 1*l.* 11s. 10d. The same clothes which were washed in the country with soft water for 5s. 3d. cost in town with water from Chelsea Water Works, 10s. 10d.

Under the third head of the inquiry,—the mode of *removing* water after it has been used, the arguments in favour of small pipe drains are reiterated, and evidence quoted in favour of their superiority over large drains.

The statements made by Messrs. James Walker, W. Cubitt, and I. K. Brunel, on the City sewers, are attributed to their having trusted the reports of others, who have misled them, and in opposition to the opinions expressed by these engineers as to the size and form of sewers, various experiments are quoted. In one case, 150 houses were drained perfectly through one 6-inch unglazed earthenware pipe!

"It appeared from the gaugings of the run of water on ordinary days (and exclusive of storm-water), that the drainage of 1,200 houses occupied a space not larger than would pass a 5-inch pipe, proving that the actual drainage of 1,200 houses would go through a space less, by two-thirds, than that which, on the advice of various architects, was fixed by the Metropolitan Building Act as the minimum size of a drain for a single house. If, as appears probable, the flow of soil water from

house-drains in the entire metropolis were in the same proportion, then the whole of the present soil or refuse water from the houses might be carried away in one pipe of 3 feet in diameter, and a double quantity in one 4-feet pipe."

The advantages of *back* drainage are strongly urged, and the necessity of *preventing* accumulations is properly insisted on instead of making ineffectual endeavours to withdraw from sewers the foul gases generated by such accumulations. "It is confidently predicted that when the common syphon or water-traps are relieved from the pressure of such gases as are now evolved from stagnant fluid and semi-fluid matter, they will be found effectual in arresting any odours which may arise from the reduced surface of running sewer water."

We will take this opportunity to inquire what has become of the plans sent in long ago in reply to advertisement by the Commissioners of Sewers, for the drainage of London? whether any of the competitors have been paid, not to say rewarded? and what the Commissioners are now about? The sewers of London are at this moment full of danger; the hot weather is approaching; and if we remain free from a pestilence, it will not be for want of facilities for its approach.*

THE NEW ALMS-HOUSE ON DEER ISLAND, IN BOSTON HARBOUR.

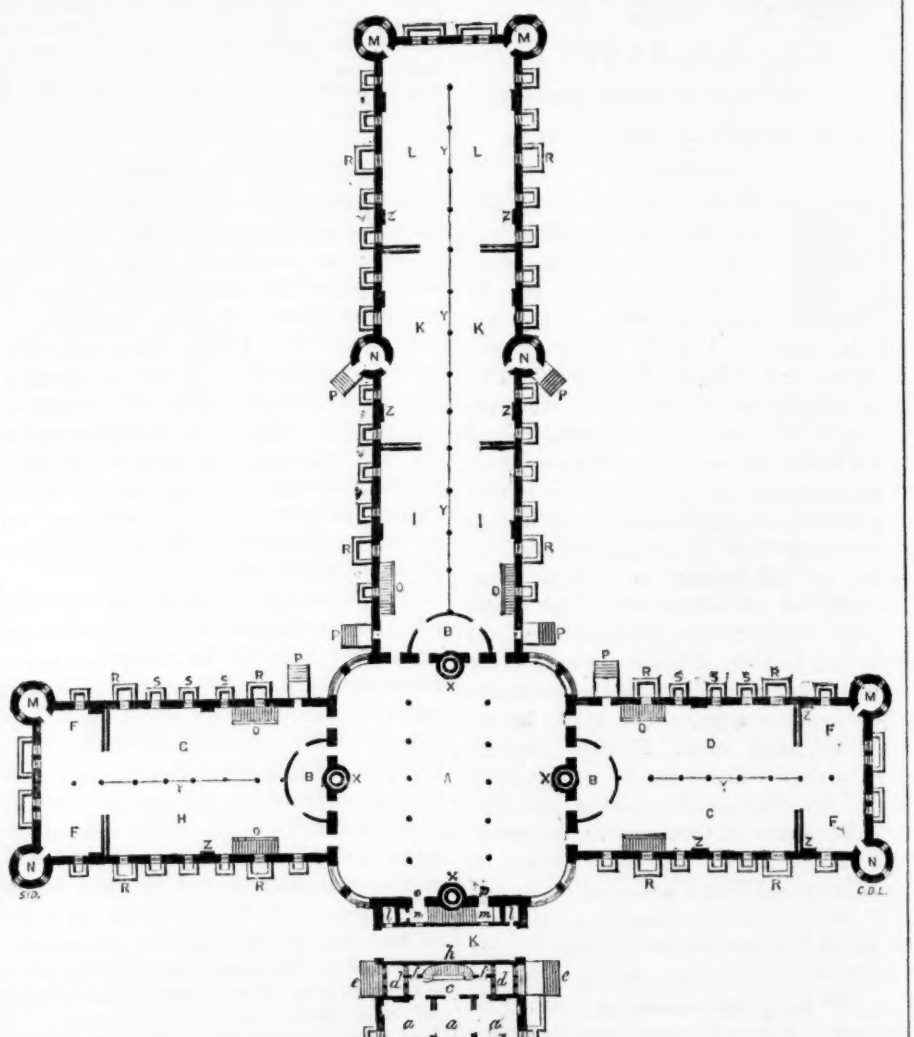
THE New Alms House erecting on Deer Island, in Boston Harbour, United States, was designed by Messrs. Louis Dwight and Gridley J. F. Bryant. This building does not represent the workhouses of America. Each county in the state of Massachusetts has its poorhouses or workhouses, the large cities or towns, theirs. But this building now erecting is the property of the city of Boston, and is intended as a place for the English, Irish, French, Germans, &c., who go there by thousands during the warm months: sick, poor, and diseased.

The size of the building is such, as to allow four feet by twelve, on the floor, and twelve feet in height, to each of twelve hundred inmates; *i. e.* about six hundred cubic feet of space to each person.

The form and structure is that of a "Latin Cross," having its four wings radiating at right angles from a "central building." The central building is four stories high: the lower story (on a uniform level with the cellars or work-rooms of the north, east, and west wings) contains the bathing-rooms, cleansing-rooms, furnace, and fuel-rooms; the two next stories contain the general guard-room, to be used also as a work-room; the next story is the chapel; and the upper story is the hospital. The south wing is four stories high; the lower one contains the family kitchens and entry of the superintendent's family; the second is appropriated for the family parlours of the superintendent, and a room for the use of the directors, together with the entrances and staircases, and the opening or carriage way, for receiving the paupers. The staircases communicating with the guard-room, and with the cleaning-rooms in the lower story of the central building, are also located in this story. The two remaining stories will be used for the family sleeping-rooms, superintendent's office, officers' rooms, and bathing-rooms,—together with the entries, passages, closets, and staircases. Each of the north, east, and west wings is three stories high, with basements and attics over the whole surface of each wing. The basements are for work-rooms. The remaining stories, including the attics, contain the wards, hospitals, and day-rooms for the inmates, together with the sleeping and inspection rooms for the nurses and attendants.

* Some unsightly works are now going on in Palace Yard, near Westminster Abbey, which have already provoked discussion in the House of Commons. A steam engine is being erected there to drain the land, as we understand Lord Ebrington, while the new sewer for Westminster is being put in.—The correspondence between Mr. Barry and Mr. H. Austin relative to the sewer under the new Houses of Parliament, which we reviewed at the time, has been called for in Parliament.

PLAN OF GROUND FLOOR OF NEW ALMS-HOUSE, BOSTON.



References:—

A Great kitchen
B Inspectors' rooms
C Eating room for working and healthy men
D Eating room for old and infirm men
F Exercising or day rooms
G Eating room for lying-in-women
H Eating room for healthy and working women
I Bakery and dry store room
K Bathing and clothes room
L Ironing and drying room
M Water-closets } In towers
N Stairways }
O Stairways
P Steps and entrances to house
R Cellar doorway curbs
S Cellar window curbs
X Ventilating and hot-air flues
Y Screen partition 7 feet high
a Superintendent's family parlours
b Directors' room
c Superintendent's entry
d Superintendent's vestibules
e Entrances to keeper's house
f Closets
h Stairway
i Outside entrance to basement
k Archway entrance
l Coal drops
m Entrance to great kitchen and stairs to basement
n Stairs to superintendent's office
o Entrance to great kitchen
p Water-closet.
z Open fire-places once in 50 feet in every story

There are eight circular towers attached to the exterior walls of the north, east, and west wings; they contain the water-closets requisite for the inmates of the building; two of them contain staircases. The water-closets are placed on the level of every story, and entered immediately from the floors thereof, and are disconnected from the main building by a column of air passing through upright openings, in the exterior walls of the towers, opposite to each other, and placed near the walls of the building.

The dimensions of the building are as follow, in round numbers:—The centre building is 75 feet square and 75 feet high, each perpendicular corner being subtended by the section of a circle. The superintendent's house, if the building faces the south, makes the south side of the centre building, except the circular corners, and is thrown out by these corners 50 feet by 50 on the ground, and 50 high; so that it stands almost as much separated from the main building as if it were entirely disconnected with it, and is still near enough for the convenience of the superintendent. The north wing, intended particularly for women, is 100 feet by 50, and 50 feet high, *i. e.* twice as large as the superintendent's house. The south wing, intended particularly for men, is 100 feet by 50, and 50 feet high, the same dimensions as the north wing; and both these wings are separated from the superintendent's house, and thrown out from the centre building like the superintendent's house, by the semi-circular corners, for purposes of better supervision and ventilation. The east wing, intended for the accommodation of different classes, and for different purposes, in the different stories, is 200 feet by 50, and 50 feet high, *i. e.* twice the dimensions of the north and south wings, and four times the dimensions of the superintendent's house. The north, east, and west wings have three stories, each 12 feet high, above the basement, and beneath the attic. The attic is 9½ feet high, and the basement 8½ feet high. The south wing is four finished stories high, and the floors of these stories are uniform with those of the three other wings. The circular towers attached to the exterior wall

INSTRUMENT FOR DRAWING THE HYPERBOLA.

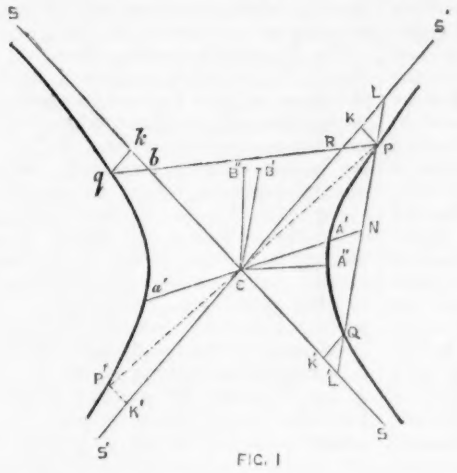


FIG. 1

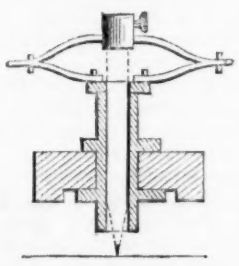


FIG. 3

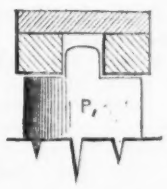


FIG. 4

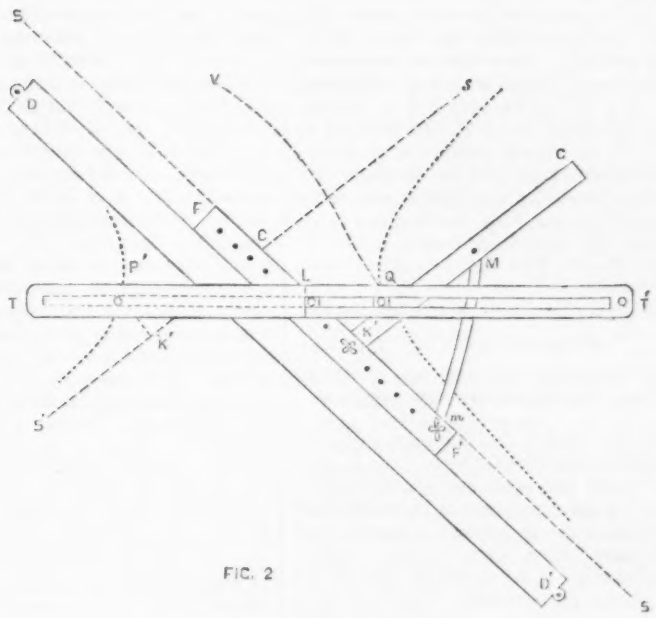


FIG. 2

of the north, east, and west wings, are each 65 feet high and 13 feet in diameter.

The proportions of the building are arithmetical:—the centre building is a cube of 75 feet, with the corners subtended; the superintendent's house is a cube of 50 feet; the north wing is two cubes of 50 feet each; the south wing is two cubes of 50 feet each; and the east wing four cubes of 50 feet each.

The paupers, as they arrive, are received at a central point, under the eye of the superintendent, in his office, as they approach; thoroughly cleaned, if necessary, in the basement central apartments for cleansing; and distributed, when prepared for distribution, to those parts of the building assigned to the classes to which they belong.

There is a chapel, with a gallery, occupying 75 by 75 feet, on the third floor of the centre building, two stories in height—the floors of the chapel and gallery being on a level with the third story and the attic floors,—which is well lighted, in a central position, of convenient access from all parts of the establishment, and which is commodious enough for those who are able to attend religious worship out of even a larger population than 1200.

Large folding-doors, or traversing-doors, are an original feature of this plan, and answer, by being opened wide, and by turning, in different directions, important ends, in making rooms for particular purposes, when they are wanted; and when such rooms are not wanted, in being opened wide, or turned back, so as to leave the supervision unobstructed, and change the circulation of the air throughout the establishment.

It is not absolutely a fire-proof building, but the roof is slated; the floors are double, and laid with mortar between them; the ceilings under the floors, and over the rooms, consist of joists, and the bottom of the lower side of the double floors; the walls are brick, built hollow, and without lath and plaster on the inside, or coverings of any kind on the outside; the windows are wooden sashes, but they are set in a thick double brick wall, and may each and every one of them burn without burning another. All the wings are separated from the centre building by a thick brick wall, covered and secured in all its openings, with iron doors and shutters, and rising above the roof of the wing, so as to make a barricade against fire, behind which the inmates of a wing on fire may retreat, and firemen may be protected.

The building is all under contract, and the whole was to be finished on the first day of July, 1850, at an expense not exceeding 150,000 dollars.

Annexed we give plan of the ground floor. A view of the building will be found at page 294.

DESCRIPTION OF AN INSTRUMENT FOR DRAWING THE HYPERBOLA BY CONTINUED MOTION.

THE diagram fig. 1 is intended to explain the property of the hyperbola, upon which the method is based. Let the curve PA′Q, P*a′q* be a hyperbola, of which C is the centre, and S*s* S′*s′* the asymptotes, P any point in the curve.

Through P draw any straight lines LL′ P*q*, &c., so as to cut both the curve and the asymptotes in QL′, *ql*, &c. Through Q and *q* draw QK′ *qk* parallel to S′*s′*, and through P, PK parallel to the other asymptote S*s*. Then shall the bases KL *kl* of the triangles QKL *qkl*, &c. be constant, and always equal PK.*

The instrument is composed of five principal parts:—

I. A fixed point P, see fig. 4, which may be fastened to the drawing board by pins or weights, or any other method.

II. A straight edge DD′, which I call the *asymptote bar*.

III. A *radial bar* TT′, with a socket at L, on one side of which it is grooved as TL (compare fig. 4), and slit on the other as LT′, (comp. fig. 3).

IV. A bevel composed of two parts, the *base bar* FF′, and the *parallel bar* K′G. The former must have a point centrically placed on its upper line, and fitted to the socket L on the *radial bar*; it should also be graduated on each side of that point, towards *m* and C. It must be so contrived by grooves and clamps, that the *parallel bar* may be placed at any distance from L′ along the *base bar*, and may make any angle with it.

V. The pencil tube, fig. 3, must slide between the two rails, if they may be so termed, of the slit portion of the *radial bar*, by means of the double flange on its lower part. The thickness of the flange must be let into the above-mentioned rails, but the tube itself fall a little below them. There should also be provided a spring of steel, or elastic band, to keep the pencil down upon the paper.

Let it be proposed to draw the curve PA′Q of the diagram figure 1, the asymptotes S*s*S′*s′* and the point P being given. The position of the fixed point P′ is first found from P by cutting off P′C=PC from the straight line PC produced.

The *asymptote bar* DD′ is then fixed parallel to S*s*, and just the thickness of the *base bar* FF′ below it.

The bevel FK′G is so adjusted that L′K′= P′K′ or PK (allowance must be made for the semidiameter of the pencil tube), and the parallel bar K′G must be set parallel S′*s′* and clamped, and further secured by a strut M*m* provided for that purpose. Lastly, the socket and point at L must be fitted to one another, and the groove TL placed upon the fixed point P′, the pencil tube brought up to press upon the *parallel bar* as at Q, and the pencil itself upon the paper by means of the spring.

All that now remains to be done is to slide the base bar upon the asymptote bar, and keep the bottom of the pencil tube in contact with the parallel bar, which is generally done by the help of a piece of string. The curve may thus be drawn with great accuracy.

I have met with four other methods of drawing the hyperbola by continued motion: one is given by Mr. Olinthus Gregory, in his "Mathematics for Practical Men," another by Mr. Hymers, in his "Treatise on Conic Sections." The two others are the inventions of Mr. Child and Mr. Godfray, and have appeared in the "Mechanics' Magazine." Of these the first is certainly the best; it does not, however, seem calculated to give so great a degree of accuracy at a distance from the vertex as the method here represented. The instrument described in this letter has also the advantage of supplying the means of drawing the conchoid of Nicomedes; for it will be obvious from the nature of the motion of the point L in the radial bar, along the straight line

* This is readily proved from the relations of the asymptote and the curve, with respect to conjugate diameters. Draw the axes CB′ CA″ respectively parallel to LL′ and P*q*, and let CA′ CB″ be their conjugates; produce CA′ to N. It is a well known property of the conic sections, that each of the straight lines, forming a pair of conjugate axes will, if produced, bisect all chords drawn to meet the curve parallel to the other line. Hence because CA′ is conjugate to CB′, and QP is parallel to the latter, ∴ NP = NQ. This property is independent of the size of the axis, and is, therefore, true of the asymptote itself, which may be considered a similar hyperbola to PAQ′, whose axis is zero. Hence also NL=NL′ (the same thing may also be proved directly for the asymptote, as it forms the diagonal of the parallelogram, constructed about the centre, upon the conjugate axes.) But NL — NP = NL′ — NQ, that is, PL = QL; but the triangles have the angles about their equal sides equal, therefore the bases are equal, *i.e.* K′L′ = PK. An exactly similar proof shows PR = *ql*, and therefore *kl* = PK.

S*s*, and about the fixed point P′, that if the pencil tube Q were clamped to L′T′, instead of having a certain sliding motion along it, the resulting curve would be the superior branch of the conchoid, as Q*r*.

It is curious to observe, that by thus adding an additional member, and thereby somewhat complicating the instrument attributed to Nicomedes, we produce a curve of greater mathematical simplicity than the curve called after that geometer, for a line of the second order is produced, instead of one of the fourth.

Again, if a socket be provided at the extremity of the radial bar at T′, and fitted on to the point L′, an exactly analogous modification of the inferior branch of the conchoid, will produce the hyperbola, and this is sometimes the preferable method. In the diagram fig. 1, the method first described corresponds with the letters P*qkl*. The latter method with PQK′L′.

F. C. PENROSE.

ON THE CONSTRUCTION OF HOUSES FOR THE PREVENTION OF FIRES.*

STOVES are another fruitful source of mischief in private dwellings, shops, &c. A great number of fires are occasioned by these contrivances. A stove properly and securely fixed is what we have rarely met with: in almost all cases we have found them in close contact with wood-work. A stove will be placed on a wooden floor, no provision whatever being made to prevent the woodwork from being overheated. We recollect being once called upon to examine a stove which was suspected to be badly fitted up, a smell of burning wood always prevailing as soon as the heat was of considerable intensity. Suspecting the cause, we removed the stove from its place, and found the flooring beneath it quite charred and black, the ignition having been strongest in the centre: in a short time the floor would have been burnt through: a vent would thus have been created, and the consequences might have been serious. Such instances form a key to the solution of many mysterious fires. If a sheet of iron is placed beneath the stove, or if it is made to stand on an iron tray, it is thought that sufficient preventive measures have been used. In some cases, parties *particularly* careful place slates or sheet lead beneath, but this is generally the highest effort: none of these are sufficient. In stoves with a good draught, the ignition of the fuel on the bars is very rapid, and the heat thrown down on the plate beneath of considerable intensity; we have even seen lead melted in such places with facility. Moreover, servants and others *will* sometimes take out the burning coals, and place them on the plate: these often burn fiercely for some time, and the woodwork beneath is frequently ignited in consequence. The secure mode of setting stoves is to place them on a foundation of brick; two bricks' height will be sufficient, taking care to fill up the interstices between the bricks with fire-proof cement. If this foundation is objected to, an iron tray should be provided at least 4 inches deep, this being filled to a height of 2 inches with a cement which will harden well without cracking. The stove being placed in this, the heat thrown down will not be conducted through the cement, at least it will be so slowly conducted that the heat on the bottom plate will rarely be dangerous. Stoves should never be placed near the skirting board; this is too often done, and as if courting danger. Plates of *blackened* metal are nailed on the outside of the wood. This is done as a preventive measure, but unfortunately the contrivance is the very opposite of that which should be done: black absorbs the radiant heat thrown out by the stove. If white or polished surfaces were used, the danger would be less. While considering this, among other instances of neglect of precautionary measures in every-day business, indicated by science, we are inclined to wonder at the really little practical progress we have made in such matters. A lecturer in a scientific institution was pointing out, while noticing the phenomena of heat, the absurdity of having blackened surfaces round highly-heating stoves, at the same time that the stove in *his* lecture-room was furnished with these objectionable appliances. We have often thought that it was a striking commentary on the little practical good that had resulted from his *stated* prelections in that place—where arrangements were suffered to be adopted in direct opposition to the principles he made it his business to elucidate. The iron pipes attached to stoves are often the cause of fire. "When they are not in use, particularly if much soot be left in them, they attract moisture, and are rapidly oxidized; then, when they become filled with soot, and the soot takes fire, it burns fiercely, and the fire drops through the rust holes and the joints; and if these droppings of fire occur between a wainscotting, or a battening and a wall, at the hole where the pipe enters the brick flue, it is likely to set the house on fire." Great carelessness is shown in the placing of the pipes. We have seen a hole cut in a wooden partition, the iron pipe lying against it, and, in one instance, a range of pipe carried along the ceiling, in close contact with it,—a quantity of dry goods, piled *beneath*, reaching to within a very short distance of the ceiling. It is lamentable to think that such gross carelessness should be matter of every-day occurrence. If iron pipes are used, they should be made of stout metal, and when passed through apertures in a floor or lath and plaster partition, the hole should be made much larger than the outside diameter of pipe. In this aperture a short length of earthenware pipe should be inserted, the inside diameter of which should be of size sufficient to allow the iron pipe to be passed through it. The earthenware being a very slow conductor, will prevent the heat from injuring the wood-work. All pipes should be hung at least 6 inches from the roof, by means of iron brackets or staples; they should never be allowed to be in contact with the ceiling, much less carried *between the floor and ceiling*. The hazard of the latter plan is the most "imminent and unwarrantable. Say what they may of surrounding the flue with incombustible materials, no flue can be made safe within a few inches of woodwork." We see no reason why earthenware pipes should not be used for stove flues: they can be had of all diameters and all curves. There is a species of stove (much used in shops) having descending flues. They are doubtless very neat, and the absence of the flue is considered an advantage, nevertheless their use is very much to be deprecated. "Descending iron flues from open fireplaces, or cast-iron stoves set up in shops and halls, are productive of frequent firings: whether they are conducted through the flooring and along the ceiling of the room beneath to an adjacent chimney, or are carried between the joists to such chimney, or just over a wooden floor, they are full of danger." Such is the opinion of one who has extensive experience in connection with the subject.

Great attention should be paid to the internal gas-fittings in houses: brackets, projecting from chimney-pieces, are prolific sources of mischief: they are made to swing round (sometimes in a large circle), and can be easily put in contact with the wall. We have seen in many houses the paper thereon burnt a long way up, in consequence of the gas jet, when lit, having been placed too near the wall. In bed-rooms, wall brackets should never be used, especially long ones, which can be taken near the bed. Gas wall brackets should in all cases have a strong glass shade covering the flame, or a wire guard may be attached near the jet, of some two or three inches diameter, so that the light, unprotected, cannot possibly get nearer the wall or woodwork by at least a distance equal to the radius of the guard.

That the defects we have pointed out are of no trifling moment, a brief thought will suffice to show. It has not been our purpose to prove that fireplaces and stoves are necessarily attended with danger, but rather to cause our readers to think for themselves, while pointing out defective arrangements,—to make them understand the causes of danger, so that they may set to work, and find out simple means by which the lamentable effects may be entirely obviated. The subject is one to which the public attention generally is now directed; they have been content to leave the matter hitherto in the hands of the builders; but this state of affairs is dying fast away, and it is but fair and right that all parties interested in building should give their earnest attention to the subject. "A very slight effort of memory will revive the names of noble mansions, of noted public buildings, and of large manufactories, which have been entirely destroyed," by some one or other of the foregoing causes. "The lamentable conflagration of Buchan House, the splendid mansion of the Duke of Montrose, in Loch Lomond, is ascribed to the circumstance of an oaken window lintel having been too near one of the flues. * * * Besides the houses actually destroyed, many make wonderful escapes, indeed no one can say, at at any time, that his house is not in progress of ignition. Within the fabric of its walls fire may be working its way silently and unobserved. Lately, in the course of certain repairs in Glamorgan-house, Peeblesshire, a beam of timber, charred and half burnt, was discovered in connection with the kitchen chimney: that it had not when burning set fire to the whole edifice is matter for extreme surprise. We have also heard, that in the case of some late alterations at Gore-house, in Lanarkshire, the fine modern mansion of Mr. Cranstoun, beams of timber were removed in a state half consumed by fire. It is really too bad that builders should exercise so little care in matters of such very serious concern."

A superficial observer would be inclined to think, judging from the lamentably little progress we have made in connection with the subject, that the promulgation of plans to insure fireproof construction has been of recent introduction. This, however, has not been the case. In 1748 Dr. Halls made several experiments with a view to render flooring fireproof. He caused a layer of earth to be laid on a board half an inch deep: a fire was maintained and kept in fierce ignition for two hours before the board was burnt through: the thickness of earth was one inch. This plan it is obvious was attended with many disadvantages; nevertheless it was important, inasmuch as it proved the benefit to be derived from employing non-conducting substances,—the leading feature, be it observed, of all succeeding plans. In 1775 Mr. Hartley was very successful in his experiments. His plan was nailing plates of thin iron on the joists, at their upper side, the edges being folded over, lapped and hammered close. The floors, staircases, &c., were protected in the same way: the expense of the plan when extended through a building he estimated about 5 per cent. This plan is worthy of consideration; no invention, however faulty, is totally worthless; it may have the good effect of setting people thinking, which is but the prelude to further improvements. The plan published by the Earl of Stanhope is calculated to be of eminent service to parties who are willing to attain knowledge on this important point. It was the first attempt at a complete system, so far as we are aware, and, independently of its inherent merits, it was valuable on this account—it has furnished many with extremely valuable hints. The plan may be briefly described. The principal part is what he terms under-flooring. The sides of the joists and main timbers are covered with laths of oak or fir, some quarter of an inch thick; the sides are to be completely covered, with the exception of a part 1½ inch deep near the top; this will make a ledge or projection on each side of the joist: before fixing the laths, the joists are to be covered with a coating of rough plaster hereafter described; pieces of laths are then cut, of length sufficient to go between the spaces of the joists, the ends lying on the ledges previously mentioned; these short pieces are to be laid close to one another, thus forming a kind of flooring, the bottom of which is 1½ inch from the top of the joists, the intervals occurring between each being thus filled up: the ends of the cross pieces are to be deeply laid in the rough mortar, but not nailed as the other longitudinal laths are. On the top of this lath flooring, thus made between each pair of beams, a layer of the rough mortar is to be laid; this is to come up flush with the top of the joists. In a day or two, when somewhat hardened, the mortar is to be laid with a trowel home to the sides of the beams, taking care to allow none of it to be opened on the top edges. The method of double under-flooring is by spreading a thin layer of the rough mortar on the lath foundation, then pieces of lath, the same length as those under, are imbedded in the mortar while soft; then a

* See page 242 *ante*.

fresh layer of mortar, another layer of laths, if necessary; but the last laid mortar will likely be flush with the top of the joists. The cross laths should be laid close to one another. Instead of using laths for the foundation, to support the mortar between the beams, iron plates might be used with advantage; these should be less by at least an eighth of an inch than the intervals, so as to allow of free expansion. If tightly fixed between the beams, when expanding, as lateral movement will be prevented, they will rise in the centre, and have a tendency to move the mortar. The bed of mortar may be made of any depth, by leaving a large enough space between the top of the joists and the last lath or fillet. Another important feature in the plan was what he called extra lathing. Before nailing the laths, the beams, rafters, or other places to which they are to be attached must be covered with a layer of the rough mortar. The laths should be nailed close to one another, and when the laths overlap one another, these should be carefully bedded in the rough plaster. On the first layer of laths thus made, a pretty thick coat of the plaster must be laid, and laths should be nailed to the first layer, each being firmly squeezed into the soft mortar; the second lathing may then be covered with a coating of the rough plaster, or finished as usual. Before laying the flooring, the plaster should be made thoroughly dry: to do this, three weeks may be necessary. In order to make it dry quickly, a fourth part of quicklime, in powder, should be mixed with it. If any cracks are, after drying, found in the plaster, particularly near the beams, by applying a little mortar wash with a brush they will be effectually closed. Just before laying the flooring boards, a little dry common sand should be laid on the bed of the mortar, but not on the joists. The rough plaster alluded to is made as follows: procure a quantity of hay, cut into lengths of 3 inches, not shorter; mix three measures of this with one of common sand and two of slacked lime; beat them well up, dragging the hay well in; the stiffer it is the better, provided it be not too dry for spreading with facility. The mortar wash is made, by mixing two measures of quick lime and one of common sand, with water, stirred up till it is the consistency of a thin jelly. This wash dries in a few minutes after being applied. To prove that this plan of securing buildings from fire has been eminently successful, we think it right to add the following account of an experiment made before the Lord Mayor of London, and a large body of scientific persons.

A wooden building was constructed, the methods adopted being extra lathing and double under-flooring. "The first experiment was to fill the lower room of the building, which room was 26 feet long by 16 wide, full of shavings and faggots, mixed with combustibles, and set them all on fire. The heat was so intense, that the glass of the windows was melted like so much common sealing wax, and ran down in drops, yet the flooring boards of that very room were not burnt through, nor was one of the side timbers, floor joists, or ceiling posts damaged in the smallest degree; and the persons who went immediately over the room filled with fire, did not perceive any ill effects from it whatever, even the floor of that room being perfectly cool during the enormous conflagration immediately underneath. He then caused a kind of wooden building of full 50 feet in length, and of three stories high in the middle, to be erected quite close to one end of the second wooden house. He filled and covered this building with above 1,100 large kiln faggots, and several loads of dry shavings, and he set this pile on fire. The height of the flame was no less than 87 feet perpendicular from the ground, and the grass on the bank at 150 feet from the fire, was all scorched; yet the secured wooden building, quite contiguous to this vast heap of fire, was not at all damaged, except some parts of the outer coat of plaster work. This experiment was intended to represent a wooden town on fire, and to show how effectually even a wooden building, if secured according to the new method, would stop the progress of the flames on that side, without any assistance from fire-engines."

It would be well if some practical improvement in the construction of staircases could be effected. Made in almost all cases of wood, they generally present facilities for the spread of fire. Once the fire catches the stairs, the extension of the flames is amazingly rapid. Being soon burnt down, they prevent the escape of those unfortunate beings who may be confined in the upper apartments. In Scotland, where the staircases are in large blocks of buildings of stone, it is exceedingly rare to find, in cases of fire, that any human being has been consumed; they have always plenty of time to escape; whereas in blocks of houses in England, the stairs are almost the first place consumed, and the retreat of the inmates cut off: hence so much woful loss of life. Stone stairs (in *separate* houses the almost universal way of building in England), are and may be condemned as objectionable; but it is a libel on the ingenuity of our mechanics to say that staircases cannot be constructed light, elegant, and comfortable, and at the same time fire-proof. The Earl of Stanhope's plan of constructing them was by securing the wooden steps by means of his method of under flooring: we have previously described this, but we may here mention, that all attempts to fire a staircase constructed on this principle were unavailing. "Several very large kiln faggots were laid and kindled under the staircase, round the stairs, and on the steps; this wooden staircase notwithstanding resisted, as if it had been made of firestone, all the attempts that were made to consume it."

Light and elegant stairs can be made of cast iron, they are highly ornamental, but doubtless by some will be objected to. If wood is preferred why may not Mr. Hartley's method of covering the exposed parts with plates of iron or zinc be used? The latter material would be in every way preferable: zinc would last a long time, and be any thing but uncomfortable in use; it might be covered if thought necessary with carpeting. In the interior of houses non-combustible materials might be used with great advantage in every respect, economy as well as safety, in a more general way than is done at present. Public opinion is rapidly progressing on this point, and many improvements are being introduced. Various useful suggestions on the subject have appeared in our pages.

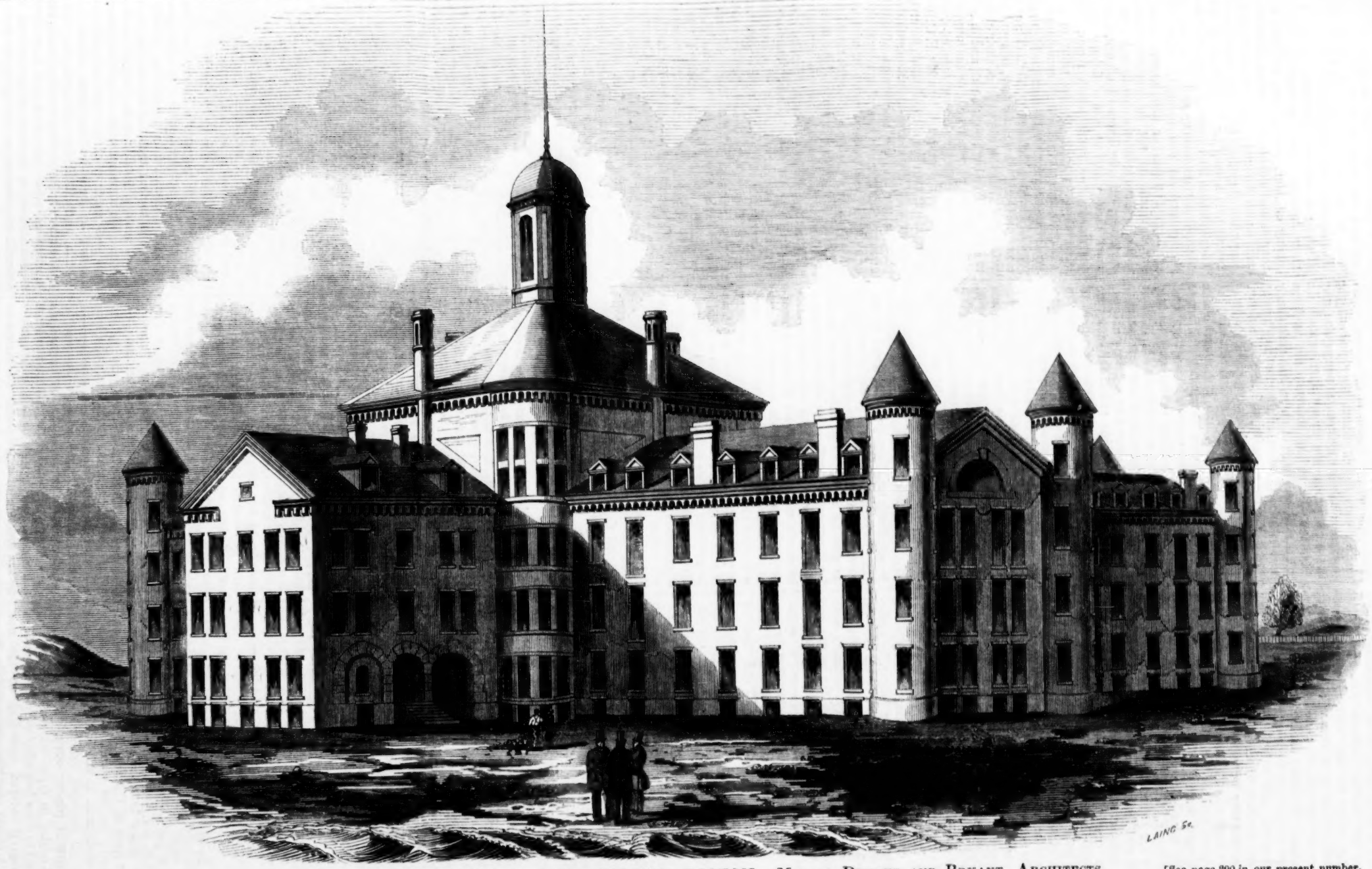
In the construction of roofs there is much room for improvements; as at present constructed they are extremely liable to combustion.

NOTES ON GAS.

THE Rugby Gas Company have declared a dividend of eight per cent. besides voting 100*l.* to a reserve fund, and having found out the advantage of lowering prices, they have passed from 7*s.* 6*d.* to 6*s.* 3*d.* a thousand cubic feet. ——The Southampton Gas Company are ready, it is said, to reduce the price of their gas to 5*s.* a thousand so soon as the arrears due to them for the public lights are paid up. ——This announcement is already reacting on Winchester, the gas company there being reminded by a Hampshire contemporary that the argument used by them for keeping up their very high prices was that 6*s.* a thousand did not pay at Southampton, and, as that argument is virtually at an end, calling on the Winchester Company at least to reduce their price *to* 6*s.* a thousand, a measure which, it is said, would infallibly allay the discontent now existing.——The price at Hinckley has been reduced to 8*s.* and a dividend of five per cent. declared. As in the case of Rugby just noted, and in so many other instances, doubtless the Hinckley Company have now a well-founded hope of thus exalting their dividend as they reduce their charge; for the true "rule of three" in gas concerns seems to be, that if 8*s.* give five per cent. 7*s.* 6*d.* will give 8, and 6*s.* 3*d.* still more, in due proportion, and a long way further down the scale of prices.——A correspondent of the *Leicester Journal*, in pointing out the reason which now induces the gas company there to offer a reduction to large consumers, these being able to help themselves by the erection of small works on their own premises, remarks,—"A few large consumers in Leicester, I learn, already help themselves in this way: at several village and other stations the railway companies do the same; and so small have such works been constructed, that I have seen one contrived by its owner *for only five lights*, in a town where they paid 12*s.* 6*d.* per thousand feet for gas; and he told me that the actual cost to him, with coal at 18*s.* per ton, was not 2*s.* 6*d.* per thousand. The outlay on this miniature gas-work was 10*l.* If the gas company, therefore, do not lower their demands very considerably, they will, sooner or later, have a host of rivals whom they cannot exterminate; which circumstance will render the remaining customers very uneasy when they find that their neighbours are paying only a small price for the same article. They will then have to come down, *after losing their larger consumers;* and this, too, supposing that no new invention takes effect, tending to supersede the present kind of gas. Would it not be much pleasanter, think you, to *lower the article and keep the customers*, and by increase of consumption more than make up the deficiency to the shareholder?—a result which almost always succeeds a reduction in the price of gas." The difference between a large consumer and a small he estimates at not more than 7½ per cent. for extra cost of collection, &c. There are many provincial companies now, however, who make no distinction whatever in their charges to small and to large consumers, and it is not easy, all things considered, to see why they should.——A specification was enrolled during last week for a new patent, by a Mr. F. C. Hills, of Deptford, manufacturing chemist, for certain improvements in gas-making, among which we perceive one for the purification of gas by means of the mere oxides of iron precipitated or hydrated, as suggested by us for trial, without any lime or sulphate, though mixed with sawdust, breeze, or other absorbent material, to allow of the passage of gas through it. "When the absorbing materials become inert," as related in the specification, "they are revivified by passing a current of atmospheric air through them;" so that, as anticipated, the iron oxide appears to become again as useful as before, without any help from sulphate of lime or other admixture. The same chemist has enrolled a mode of introducing air to the purifying material, and a mode of compressing peat for gas-making as well as for fuel generally.——The Great Central Gas Consuming Company's Bill has passed the ordeal of Committee, and been read a third time in the Commons. The City authorities, moreover, have agreed to allow them to make up for lost time by laying their pipes by day as well as by night in such side streets as their surveyor and they shall authorise. The Company intend, it is said, to proceed with the utmost diligence both by night and by day. It was shown to the satisfaction of a committee of the City authorities, that the Directors have now 75,000*l.* in hand. We have not space this week to note any of the more interesting or important points in the report before the Commons' Committee, but shall recur to it.

THE INSTITUTE OF ARCHITECTS.—At an ordinary meeting, held on Monday, the 10th inst., Mr. Salvin, V.P. in the chair, Mr. A. J. Beresford Hope, M.P., was elected honorary fellow; Mr. A. Salvin, jun., associate; and Herr Zahn, of Berlin, corresponding member. A paper was read by Mr. C. Fowler on "Terra Cotta and Artificial Stone as connected with Architecture." A paper was also read descriptive of a new method of converting gas, and other elastic fluids, having an affinity for oxygen, into fuel for fire, by Mr. D. O. Edwards.

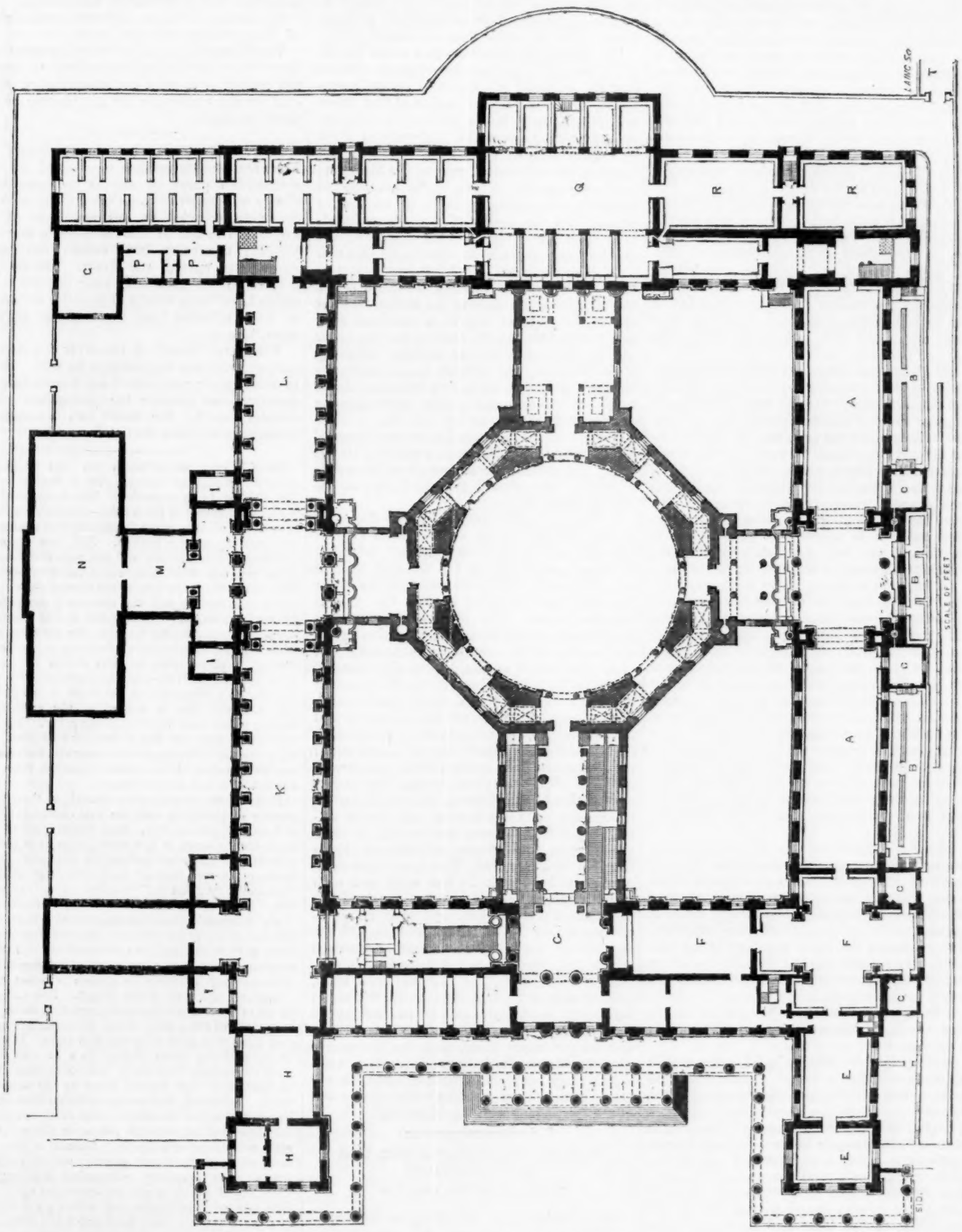
BUILDING WORKMEN'S PROVIDENT SOCIETY.—The subscription list of this commendable association is progressing rapidly. We rejoice to find that the amount has now almost reached 900*l.*, and is daily on the increase. We hope not only to see it supported by a great majority of the workmen, and patronized by every leading name without exception, in the building and engineering businesses interested in its objects, but that by the junction of other provident and benevolent associations of a kindred nature with it, a powerful corporation, embracing in its beneficent grasp every branch of the building trades, will be the result of the more isolated efforts by means of which these foundations are at present being laid.



THE NEW ALMSHOUSE ON DEER ISLAND, BOSTON.—MESSRS. DWIGHT AND BRYANT, ARCHITECTS. [See page 290 in our present number.

THE BRITISH MUSEUM.

PLAN SHOWING PROFESSOR HOSKING'S DESIGN FOR EXTENDING THE ACCOMMODATION.



ENTRANCE FRONT.

References:—

A A Royal Library.
B B B Proposed additions for printed books.
C C Officers.
D D Rooms proposed for receiving, sorting, &c.
E E Manuscripts rooms, now used as reading-rooms.
F F Departments of manuscripts.
G Entrance hall.
H H Rooms for trustees.
I I I I Officers.
K Miscellaneous antiquities.
L Gallery of Egyptian antiquities.
M Phigalian marbles.
N Gallery of Athenian marbles.
O Print room.
P P Officers.
Q The library of printed books.
R R Reading-rooms.
S Gardens of the houses in Montague-place.
T Approach from Montague-place.
U Gardens in Montague-street.

PROFESSOR HOSKING'S PROJECT

FOR EXTENDING THE ACCOMMODATION AND IMPROVING THE MEANS OF INTERNAL COMMUNICATION OF THE BRITISH MUSEUM WITHIN THE SITE ENCLOSED BY THE PRESENT BUILDING.

IT occurred to Mr. Hosking many years ago,—as soon, indeed, as the progress of the works had developed the plan,—that an important and valuable addition might be made to the new buildings of the British Museum within the area which they now embrace, without any derangement of the design, at no extravagant expense, and with great advantage, both as it regards the purposes of the Museum and the convenience of the public. Obvious motives, however, deterred him from making public any suggestions that might have the effect, or even the appearance, of interfering with the work of another while the design was incomplete, and while there was no pressing demand for more room and greater accommodation than the original design provided. But the original design being now in effect completed, and

its author having retired from practice, whilst the objects of the establishment have outgrown the provision made for them by that design, and projections, indeed, having been made on, or from, one at least of the outer flanks of the building, and in extension of one of its fronts, to supply the advancing demands for room, while available space in the most convenient position, with regard to the establishment generally, remains unoccupied,—the author does not feel that he need be deterred any longer from stating formally and publicly the ideas which he had formed upon the subject.

Mr. Hosking's object is to show how space, left unoccupied by the existing buildings, may be applied to meet the demand which has grown up since they were designed; that is to say, to obtain more room for the reception and exhibition of the objects of the establishment without going beyond the site now occupied or embraced by the Museum, and to facilitate the access, to the objects already provided for, of the uncontemplated number of persons who seek amusement and instruction within the walls of the Museum.

Mr. Hosking assumes that there can be no objection to the occupation, by buildings in addition to the Museum, of the now uncovered quadrangular court or cloister enclosed by the present buildings, so far as it may be done without injury to their light, inasmuch as that court does not come into use in its present condition, and does not contain any object of which it has been thought necessary to present any view from the buildings which make it a cloister. This quadrangle appears to be 317 feet in length and 238 feet wide, and none of the buildings fronting to and deriving light from it are as much in height above the level of the sills of the windows as one-fourth of the breadth of the quadrangle; whilst, as a general rule, the breadth between opposite buildings need not be more, as it regards light to the windows, than the height above their sills of the buildings opposite to them; and if, in the present case, the unoccupied ground be built upon in such manner only that the distance of any building from opposite windows be more nearly twice, than once, the height of the building above the sills of the windows liable to be affected, there can be no injurious effect produced upon the windows of the present buildings by any such occupation of the cloistered site.

Mr. Hosking assumes, too, that it will not be deemed an unreasonable interference with the present buildings to remove those parts of the outer walls to the quadrangular court with which any additional buildings may come in contact, for the purpose of intercommunication, and to restore the light now coming by windows, which such additional buildings, where brought into contact with the present buildings, would necessarily obliterate.

We give Mr. Hosking's proposition in his own words, as submitted to the Trustees in November last:—

"My project is, then, to build in the middle of the quadrangular court, inclosed by the present main buildings of the museum, in the manner shown in the accompanying plan, a modified copy of the Pantheon at Rome,—that is to say of the cupola-covered rotunda known by that name,—as nearly the full size as possible, consistently with the size of the area, and with the height of the present buildings, and so to form a grand central hall for the exhibition of the finer and more important works of sculpture, and of such other objects proper to the purposes of the Museum as most require that steady and equable light which is so well obtained from the eye of a cupola. A quadrilateral hall, to contain ample staircases, would lead from the present entrance vestibule of the Museum into the grand central hall or rotunda, and by the floor of the rotunda itself, or by a corridor about it to the east, west, and north galleries respectively, through new compartments added to them on the level of the floor of the lower or principal story of the Museum; and the staircases would lead up to a bridgeway or continued landing on the floor of the upper story, where another similar corridor about the rotunda would afford similar facilities of access to the upper, east, west, and north galleries, whilst the bridgeway would also make the communication complete to the south gallery. The formation of staircases in the place and manner indicated would allow the space now occupied by the grand staircase to be restored to the purposes of the Museum, and thus make the circuit complete in both stories, whilst every part would be rendered, by the before-described arrangements, alike accessible from a common centre.

"In taking the Pantheon as a model for the grand central hall, it may be proper to observe that its proposed adaptation is perfectly consistent with the original design of that structure, which made it the centre of a more extended building, above the other parts of which its cupola rose, as the cupola might in this case rise, above the other parts of the Museum; for the design will be seen by the drawing* to carry the connecting galleries to no greater height than the height of the present buildings, with which, indeed, the fronts to the cloisters may be made to correspond in elevation. The Pantheon is 143 feet (English measure) in diameter upon the floor, and it is 143 feet high from the floor to the curb round the eye of the cupola; but as a full-sized copy would crowd the space, and, by its magnitude and height, overpower the existing buildings of the Museum, the present design limits the diameter of the rotunda, and consequently its height, to 120 feet, and giving more than an equivalent thickness to the inclosing walls—which are resolved externally into an octagonal form—takes out of the walls a corridor 10 feet wide, and obtains thereby nearly all the space upon the floor that a full-sized copy of the Pantheon would give.

"The accompanying plan shows that what is here proposed may, as first remarked, be effected without any derangement whatever of the original design of the building, while it adds new room and increased facilities to the Museum without going beyond the present inclosing walls. The plan of the present buildings is copied from the only plan accessible to the author,—that attached to the report of the Committee of the House of Commons, published in 1838. The portions of the present buildings required to be removed to receive the suggested additions are left in outline, and the suggested new buildings are shaded more faintly than those which now exist, and would remain undisturbed by the present scheme.

"The additional room which this project would give to the Museum is, 1st, The great central hall, with one floor of 120 feet in diameter, yielding an area nearly equal to twice the area of the present Athenian or Elgin Marbles Gallery; 2nd, Two inscribing octagonal corridors, each 10 feet wide, and each comprising an area of between four and five thousand superficial feet, and each also presenting niches fit to receive statues, and extensive wall surface fit to receive sculptured reliefs and inscriptions; and, 3rd, The connecting galleries on the east and west sides, each 45 feet by 35 feet, and in both stories; the north connecting gallery 65 feet by 50 feet in the principal story, and 35 feet by 50 feet in the upper story, and the site of the present staircase in both stories. This additional room may, the author believes, be obtained at a cost not exceeding that of any one of the existing sides of the Museum."

* The drawing includes longitudinal and transverse sections of the whole building, but these are of necessity omitted here.—ED.

THE BUILDING PLANS FOR THE '51 EXHIBITION.

PARTICULARS FOR TENDERS.

ON Monday next, according to advertisement, the particulars will be obtainable by parties willing to tender for the erection of the proposed building.† It will be found that the works are divided into eight portions. Every tender must be accompanied by the schedule of quantities of the portions tendered for, fully priced and moneyed out, in a form supplied.

If a tender for labour, use, waste, maintenance, and removal, it must include the top-soiling of the site to as nearly as possible its present form, within a reasonable time after the removal of all the works.

Tenders for methods of construction other than those shown upon the drawings and described in the specification will be entertained, if accompanied by working drawings, and specifications, and fully-priced bills of quantities; but if any such tender shall not show clearly and truly the comparative cost of the system proposed and that shown upon the committee's drawings, &c., it will not be entertained.

All tenders are to be delivered at the Palace of Westminster on July 8, 1850.

The Commissioners are to be distinctly understood as not binding themselves to accept any tender, or to make any remuneration whatever for any tenders, or for any trouble or expense incurred.

† The sum required to be paid for these particulars is too large.

If we were to say how many letters we have received respecting the award on the competition plans we should be open to a charge of exaggeration. One and all, without exception, coincide in our statement of the matter. The fact is now undeniable that the building committee have erred: too many cooks have spoiled the broth. The designs pointed out for greater honour are not those which have "been wholly or partially adopted," or have afforded "the most useful suggestions."

The secret history of the error is a curious one, and will one day perhaps be told. Some of the English competitors are exceedingly indignant, and propose the publication of a counter report. We insert two communications, selected from the batch.

In this case no premium has been offered—a shabby proceeding enough, in a matter where 150,000*l.* is to be expended. The designer of the work, the planner of the whole—the master spirit—is to have nothing, while the mechanical contractor will probably make a fortune. Still, however mean and shabby this may be, and although it is possible it has kept out of the competition many whose time is much absorbed—in fact, is their money,—nevertheless it is as fair for one who chooses to compete as for another, and on this account it the more behoves the committee to act with the strictest good faith. The man who strives for honour has deeper feelings, perhaps, than he who strives for money rewards. In the latter case, all the mischief done is the missing a payment; in the other, it is a painful failure. One man is exalted at the expense of another; one man humiliates the other. He does not merely draw the lucky number that gives him the prize, but he is supposed to *vanquish* the other in the lists, and send him home wounded from the combat, and with arms reversed.

It is not my intention to remark on the general poverty of invention and the low character of the designs. Next to this, that which strikes the spectator the most is the utter disregard of the instructions. These are particularly stringent. Their language is not that of suggestion, but absolute command. "Must be," "must not be," in every line. Besides, we read this strong intimation,—"No communications inconsistent with these conditions, or any plans prepared upon a different scale from that prescribed, can be received." I think that instructions were never so set at defiance before. It is not my intention to inquire whether these conditions were well drawn or not. It is sufficient for us to know that they exist, and that those who have violated them have taken an unfair advantage over those who have complied with them. It would be like suffering some jockeys in a race to throw away the weights they carry, and compelling others to bear their full burden home to the weighing-stand. I contend, that with such instructions it was imperative on the committee first of all to go over the plans, and at once to put aside those in variance with their conditions. Instead of this, we have every requirement openly set at defiance. Instead of a temporary, economical building, the materials of which might be converted again with little loss, of given dimensions, within given spaces, to given scale, we have huge palaces, porticoes as large as that of the Exchange, sculpture, polychromy, copies of the Tuileries and Invalides, buildings of permanent character and outrageously expensive construction, of double the height that could be needed, covering not half the required space, and utterly disregarding the plan, cast-iron ribs that would span St. Paul's, "bold construction," as the committee call it, the principal boldness of which appears to be the audacity which would offer such a design, and last, not least, drawings on several sheets, to several scales, and, worse than all, huge and expensive models. I do contend that all these should at once have been rejected, and that it is eminently unfair to those who have complied with the instructions, that their plans should be hung side by side by those who have utterly set them at nought.

But what is worse than this, the greatest offenders of all seem to be among the favoured eighteen selected for especial honour, as you have already shown. Of these, no less than ten do not give the quantity of space, some not half enough; five do

not regard the plan at all; six give buildings of expensive and permanent character; four of them are magnificent palaces; four take liberties with the scale; eight make the body of the building of extravagant height; and the five who comply with the conditions in other respects, give mere sheds w hout character or architectural effect.

It is mortifying to look round the walls, and see some half-dozen designs which have strictly complied with the rules, and have as much or more merit than those selected, wholly unnoticed. I do not know whether it is from motives of courtesy so many foreigners are honoured by notice. One thing is clear, they have violated all sort of rule and requirement; there are scarcely two which would be at all suitable for the purpose, and these are merely a collection of sheds without effect or architectural character. On the whole, I cannot but consider the entire affair as likely to do serious injury to the profession (especially as the act of a committee of *architects*), and I do hope it will be taken up by abler hands than mine. You, Sir, have already made some powerful remarks on the subject; let me hope that you will continue to follow them up, and that they may lead to what we never have seen yet, "perfect fair play in competition."

A NON-COMPETITOR.

You were quite right when you said, some time ago, that the plan of an architect at Islington had been mainly adopted by the committee. I assert positively that they took the idea of their plan from Mr. Courtney's plan, yet I do not find his name among the eighteen.

ONE ACTING WITH THEM.

CURVES.

GOVERNMENT SCHOOL OF DESIGN.

AT Mr. Jopling's fifth attendance, Somerset House, on the 11th instant, after pointing out the triangular adjustments of one of his double crank apparatus, which directs to a vast variety of beautiful curves, considered applicable as forms for vases, &c., he then explained the relation of the cardioid to the cone. Finding that by different apparatus the cardioid is produced by the reciprocity of those motions which produce the ellipse, and as the ellipse is a section of a cone, he said, he has, for several years, frequently inquired what, in reference to the cone, is the cardioid? There is now little doubt but that the cardioid was known to the ancient Greeks; yet, in mathematical works of the present day, the first notice of it only appears in the sixteenth century, and it is known as the "cardioid of M. Carré;" and what is described as "Pascal's snail" is a part of it.

But to the inquiry, what is the cardioid in reference to the cone, no answer has been given, nor any explanation found in any work. The lecturer had, on various occasions, for the like period of time, explained, by means of a continuous chain, crossed and looped over a cone, what he considered indications of a series of nodated cardioids. At length he found, that simply by applying a circular disk of paper in different positions on the surface of a cone, from the apex downwards, he could obtain a gradation of lines on the conical surface, from the cuspidated cardioid, through a series of inflected and oblate forms.

He then tried to produce the nodated forms by similar means; but on making a flat ring of paper to represent the chain, and putting it on the cone, it would neither lie close on its surface, nor could it be properly or easily so applied by bending or twisting. In order to do this nicely it was found that the ring must be *cut* (Columbus's egg over again); this being done, the flat ring of paper, or a circular disk with a cut towards its centre, could then be passed twice round the cone, laid close to the surface, and thus produce the gradation of nodated lines previously indicated by the chain.

By ocular and practical geometrical demonstration this is made evident, and proves that these several lines produced by circular disks and rings, applied on the surface of a cone, are, when projected on the plane of its base, the true cardioid of M. Carré, and all accompanying changes. As to the applications of this simple discovery, it may be briefly stated that a conical surface has the property of changing the curvature of circular disks or rings applied to it—increasing and decreasing the radius of curvature at different points; inflecting, cuspidating, and nodating.

Mr. Jopling shewed that the conical surface changes simple right lines (straight lines drawn on paper, or right-lined strips of paper) into various pleasing curved forms. Further, that the ellipse, and, indeed, any true line, may be applied to the surface of a cone in a similar way, and produce regulated changes in their forms.

CHURCH-BUILDING NEWS.

THE contracts for the restoration and repair of the chancel and chancel aisles of Wimborne Minster are taken, and the work will be shortly commenced. The contractors are,—for masons' and excavators' work, Mr. James Knott, Wimborne,—for carpenters' and ironmongers' work, Messrs. Gover and Son, Winchester,—plumbers' and painters' work, Mr. Matthew Hall, London: architects, Messrs. Morris and Hebson, London.——It is proposed to enlarge St. John's Church, Moulsham, by the addition of north and south transepts and other extensions, with 300 additional sittings, and also of a bell tower and spire. The plan has been furnished by Mr. James Clarke, diocesan architect, and is prepared so that the transepts &c. can be first added. The edifice itself cost about 3,000*l.* The estimated cost of the new works will be, for—

	£.	s.	d.
North transept	358	3	0
South transept	358	3	0
Chancel, north chancel, aisle chancel, and vestry	495	15	0
For increase of accommodation....	£1,212	1	0
Tower	654	16	0
Spire	430	0	0
Porches	147	6	0
	£1,232	2	0

A committee has been appointed by a meeting of parishioners reported in the *Chelmsford Chronicle* to open a subscription list.——St. Jude's Church, Birmingham, the foundation-stone of which is to be laid on 24th proximo, is to contain 1,300 sittings, a thousand of them free. The contract was taken for 2,810*l.*, and is to be completed by Midsummer, 1851. The subscriptions are still about 800*l.* short, according to *Aris's Gazette*.——The newly-erected Roman Catholic Church of St. Thomas of Canterbury, at Erdington, was consecrated on Tuesday week. It has been erected in the Early Decorated style, with nave, aisles, and chapels, and at the sole cost of the Rev. Daniel Haigh, a convert, from designs by Mr. C. Hansom, of Clifton; sculpture by Mr. Henry Lane. The cost is estimated at about 12,000*l.* or 14,000*l.* in addition to an endowment of 200*l.* a-year.——The new church at Swindon, founded on Friday in last week, is to be built on an elevated site given by Mr. A. Goddard, M.P. The style will be Decorated Early English, with tower and spire, nave and aisles, north and south transepts and chapels, and the building is to accommodate 1,000 persons.——In consequence of a desire to enlarge the parish church of St. Andrew, Rugby, a plan has been got from Mr. Fergusson, in which he proposes to erect, in the first instance, transepts and a new chancel, and gradually to rebuild the entire church on an enlarged scale. By the new transepts and their galleries he proposes to provide 450 additional sittings. On the completion of the entire church, this number would be increased to 1,000 additional sittings for adults. The estimated cost of transepts and chancel is 4,000*l.* and the remaining portion a like sum. Great part of the sittings are to be free. A subscription is to be entered into immediately, but the rebuilding itself is to be carried out by an accumulating fund.——The rebuilding of Scott-street Wesleyan Chapel, Hull, is contemplated. The building is to be an enlarged one, and not quite so plain as the present. Its exterior (says the *Packet*) will probably resemble Wesley Chapel, Humber-street (which is of stock bricks), but on a larger scale. The cost is, we hear, estimated at about 3,000*l.* The chapel was built forty-seven years ago, and the need of increased accommodation has been successively felt prior to the erection of Waltham-street, Humber-street, Great Thornton-street, and Kingston Chapels.——The new Congregational Church at Newbro'-bar, Scarborough, designed by Mr. R. Brown, of Liverpool, is nearly completed.——St. Catherine's Catholic Church, Penrith, was opened on the 11th inst. It has been erected from designs and under the direction of Mr. Atkinson, of Carlisle, and is of decorated architecture, with high open roof. The chancel is divided from the body of the church by a light rood screen. The east window, by Scott and Son, of Carlisle, contains, in six compartments, the principal events in the life of the Saviour.

THE ARCHÆOLOGICAL INSTITUTE AT OXFORD.

THE introductory meeting was held on Tuesday, the 18th, in the Sheldonian Theatre, the Marquis of Northampton in the Chair. In the Town-hall, at night, Dr. Harrington, the principal of Brazennose, read a paper on St. Mary's Church, now under repair externally. The Architectural section met on Wednesday, and the following papers were read:—On Dorchester Church, by Mr. E. A. Freeman; on the Construction of Timber-houses in Berkshire, by the Rev. James Clutterbuck; on the Art of Glass Painting, and the Ancient Glass of Oxford, by Mr. C. Winston; and on the Manor-house of Mere, Wilts, by Mr. Nesbit.

We shall have something to say next week.

Miscellanea.

PROVINCIAL.—The enlargement and improvement of the Guildhall, Southampton, is in progress. When finished, the alterations will enable the hall to hold 800 to 1,000 persons.——The inhabitants of Merthyr Tydvil have been presented by Sir John Guest, bart., M.P., with 1,000*l.* to help them to build a new town-hall. This spirited example was followed up as spiritedly by the tradesmen of the place, thirty-seven of whom at once subscribed their 25*l.* each, and a long list of others 10*l.* and 5*l.* each. The building, under such auspices, is of course to be forthwith erected.——At a meeting of Dukinfield ratepayers the sum of 1,050*l.* was promised in half an hour for the erection of a new bridge over the Tame.——The trustees of Sir J. W. Ramsden, bart., have considered suggestions made by the committee of the Huddersfield Improvement Commissioners, and have published a revised plan, from which it appears that the principal street, to be called "John William Street," will be made sixty-six feet wide, and provided with a back; several other streets also to have that necessary sanitary appendage. The plan, however, does not provide increased market accommodation, nor any open square or place, as "lungs," in the centre of this populous town.

MODEL DWELLINGS FOR NEEDLEWOMEN AND OTHERS.—Liberal contributions received in response to an appeal by the Bishop of London, have enabled the committee appointed for the purpose, to purchase a freehold site in Portpool-lane, Gray's Inn-road, on which is to be erected a model dwelling for 20 families and 128 single women, while an existing building is to be converted into a washhouse for the neighbourhood. Under the washhouse will be repositories for perishable goods—such as those of street costermongers. The accommodation for 20 families will consist of two buildings four stories in height, one having three tenements with three rooms on each floor, and the other two tenements with two rooms on each floor, a scullery, &c., being provided for each family; whilst to both houses there will be an open staircase, and to the larger one a gallery of communication. The 128 single women will occupy 64 rooms on a building of four stories divided by a central staircase, with corridor on each side forming a lobby to eight bedrooms, each 12 feet 6 inches long by 9 feet 6 inches wide, and large enough for two persons. The charge is to be 1s. each person, or 2s. per room weekly. Except the washhouse roof the buildings will be fireproof, and the cost, including site, will be from 9,000*l.* to 10,000*l.* The actual sum received does not exceed 5,300*l.*, and the committee are naturally anxious for further assistance to avoid borrowing on mortgage.

DESIGNS FOR THE 1851 MEDAL PRIZES.—115 designs in plaster, and ten drawings for medals, have been received in competition, and are now on view at the House of the Society of Arts, in the Adelphi.

PROJECTED WORKS.—Advertisements have been issued for tenders, by 29th inst., for some improvements in the works at Plymouth citadel; by 1st prox., for the construction of a brick drain about 1,900 feet long, at Portsea; by 2nd, for the erection of a parsonage at Barnard Castle; by 1st, for the erection of a new bridge over the river Leam, at Leamington Priors; by 1st, for cast-iron girders, &c. for a warehouse in re-erection at Bristol; by 28th inst., for the erection of a savings' bank at Howden; by 27th, for the execution of works to highways at Sheffield; by 1st prox., for the re-erection of a warehouse at Bristol; by 29th inst., for alterations and additions to a house at March, Isle of Ely, with offices and stabling; by 25th, for erections of additional offices at the Derby station of the Midland Railway; by a date not specified, for an addition to a Catholic church at Southampton; by 26th inst., for cast-iron water-pipes, branches, and fire-plugs for Southampton Water-works; by 1st prox., for painting, papering, and repairing stations, cottages, &c. on London and Brighton Railway (about 270 in number, in four contracts); by 26th, for asphalting brick platforms at London station of Great Northern Railway; by 26th, for wood-paving at same; by 1st prox., for erection of a rectory-house and offices at Aston Clinton, Bucks; by 2nd, for ten horse-boxes and ten carriage-trucks; and by same date for 100 sets of wrought-iron carriage-wheels and axles, all for Great Northern Railway; by 29th inst., for switches, crossings, chairs, tank, pumping-engine, &c., for Royston and Hitchin Railway; by 26th, for cast-steel files, rasps, rubbers, and ironmongery for East-India Company; by 28th, for building stations and other works at Alnwick and Bilton; by 24th, for erection of a toll-house near Sheffield; and by 6th prox., for erection of a police-station and strong rooms at West Bromwich.

ARCHÆOLOGICAL RESEARCHES.—During the annual meeting of the Bury and Suffolk Archæological Institute, on Thursday in last week, a tumulus at Moulton, near Newmarket, was partially opened, but left by the meeting, who passed on to the Castle-hill, at Cheveley, where excavations showed the site and the stronghold of ditch and vallum. The Church and that of Wood Ditton next engaged attention, with the Devil's Dyke, at its termination, where the ditch and rampart are upwards of 45 feet deep, and at the bottom of which a paper was read on the probable formation of this work. At Newmarket an exhibition of local curiosities was visited, and papers by Mr. A. Way, and Mr. Deck were read, after which the members adjourned to dinner at the Ram Inn, where forty to fifty of them spent the remainder of the day.

NEW AERIAL MACHINE.—Another of those persevering endeavours to acquire such dominion over the air as is already possessed over the ocean, is now being made by a Mr. Bell, who has had a balloon constructed on a new principle, with means of guidance and progression in wind floats appended to the car, which hangs in form of a boat by bands from each pole of the balloon, the latter being oblong laterally, though rounded at the ends, and floating in its length horizontally, or, as it were, sideways, compared with the position of other balloons in the air. We happened to see this machine while on its first voyage across the metropolis, but were not much impressed with confidence in its steadiness of movement. On the contrary, it seemed to sway to and fro in rather a disagreeable way, as if something were wrong. This may have arisen partly from its extremities alternately disappearing from view as it really oscillated in the breeze from side to side: nevertheless, it made way steadily in one uniform direction—whether by the power of the current or that of the paddles and the tail or rudder, we cannot say.

THE LAND SURVEYORS' ASSOCIATION.—The petition adopted by the Surveyors' Association for presentation to Parliament, for protection from interference by the Ordnance in the civil duties of the land surveyors of Great Britain, has been sent to every county in the kingdom, and, from the readiness with which it has been received and signed, it would appear the provincial land surveyors have as much and more to fear than the metropolitan from the encroachments complained of, which have assumed a position of vital importance to a large and respectable profession. The London petition remains for signature at the offices of the Association, 21, University-street, Bedford-square, but by means of a printed copy, with space for signatures, any member of the profession wishing to sign, and living at a distance, may be able to add his name, such copies to be bound up, as vouchers, with the original petition.

ADVANTAGES OF EDUCATION TO MECHANICS.—It has a tendency to exalt the character, and, in some measure, to correct and subdue the taste for gross sensuality. It enables the possessor to beguile his leisure moments (and every man has such) in an innocent, at least, if not in a useful manner. The poor man who can read, and who possesses a taste for reading, can find entertainment at home, without being tempted to repair to the public-house for that purpose. His mind can find employment, where his body is at rest. There is in the mind of such a man an intellectual spring, urging him to the purpose of mental good; and if the minds of his family are also a little cultivated, conversation becomes the more interesting, and the sphere of domestic enjoyment enlarged. The calm satisfaction which books afford puts him into a disposition to relish more exquisitely the tranquil delight of conjugal and parental affection; and as he will be more respectable in the eyes of his family than he who can teach them nothing, he will be naturally induced to cultivate whatever may preserve, and to shun whatever would impair, that respect.—*Robert Hall.*

OLD WALL PAINTING UNCOVERED.—On removing a partition above the screen in Dantsey Church, Wilts, it turned out that the front of the partition was oak board, with laths nailed to it, and plastered. A painting was discovered covering the whole surface, sixteen feet by ten, and in very good preservation, considering its ancient date. It is a rude painting of the Day of Judgment.

BACKS OF LOOKING-GLASSES.—In the upper windows of our best houses in our best streets, the back of the *chamber looking glass* annoys the eye; is there no cabinet-maker that will introduce something more agreeable by the year 1851? A back painted either in grained wood or landscape, to fit nicely in the frame with brass pins, would be better than the present unfinished appearance.—D. E.

COMPETITIONS.—Designs are wanted, as advertised, for shears for lifting masts, boilers, &c. (premium 10*l.*), and for erection of two machines for lifting ballast (premium 10*l.*), both for the Sunderland Dock Company.—— A premium of 20*l.* is also offered by the Burnham Local Board of Health, for the best plan, estimate, and specification for draining the town of Burnham, and supplying it with good water—particulars as advertised.

DRY-ROT IN BUILDINGS.—A communication was made at a late meeting of the Linnæan Society respecting a peculiar form of dry-rot which spread with extreme rapidity in the church of King's Wear, Devonshire, by means of long, byssoid, rope-like shoots, different in the mode of their development, except on a very small scale, from anything which had before come within our notice. A still more curious case, which we are inclined to refer to dry-rot, has lately been sent to us for inspection, reminding us of the mural leprosy of Judæa, attacking, as it does, and more or less destroying, not merely the timber, but the solid walls themselves. It occurred in an old house near Erith, on the banks of the Thames, where it has penetrated into every crevice in and between the walls and woodwork, separating the bricks and mortar, and rendering the whole so friable that the walls must be rebuilt, to prevent their falling down. The mycelium here forms a widely expanded network of threads, which are twisted together in every possible way, so as to form anastomozing strings, of considerable tenacity, as thick as small pack-thread. A strong solution of corrosive sublimate is an effectual cure for such affections, where it is possible to apply it; but where, as in the present instance, the plague infects the whole substance of the structure, destruction seems to be the only remedy. The circumstance of the mycelium penetrating into the mortar and brickwork to such an extent appears to be new, at least we do not recollect to have heard anything of the kind before.—*Gardeners' Chronicle,*

MEDIÆVAL EXHIBITION AT THE SOCIETY OF ARTS.—We are glad to observe that the Society of Arts have reduced the price of admission to the Exhibition of Ancient and Mediæval Art to Threepence. This change has been made by the council of the Society with the view of affording the artisans in the several branches of art-manufacture exhibited an opportunity of inspecting the works of their predecessors. We hope it will be extensively taken advantage of.

NORTHERN METROPOLITAN PARK.—We are glad to observe the stir that is being sustained in attempts to realise the suggestion in THE BUILDER, that a park should be laid out in the northern part of the metropolis. A public meeting is to take place on Friday evening next at Sadlers' Wells Theatre, Lord Robert Grosvenor in the chair, when we hope to find some further steps taken towards carrying out so desirable an object.

NAILERS' STRIKE.—The strike has in a great measure terminated. It has thrown a great deal of trade into the cut and machine nail-makers' hands, but the stock in wrought nails has been considerably reduced. The arrangement with the money-paying masters has been to give the money struck for, for one month, to afford the workmen an opportunity of procuring uniformity of price throughout the trade, and of using their utmost efforts to do away with the truck system.

FOREIGN BRONZES.—Great quantities of continental bronzes are being imported into London. They are exceedingly varied in design and in value. Those not ranked as works of domestic or other use, but as mere works of art, are admitted duty free.

STONEWARE PIPES.—Tenders for providing 2,700 feet of best Glazed Stone Sewer Pipes, 15 inches and 12 inches internal diameter, with all Junction Bends, Syphon Traps, Brick 12-inch Shoots, &c. at Holloway.

Dore	£450	0	0
Garner	373	0	0
Green	367	0	0
Marshall and Co.	360	0	0
Hewes	357	0	0
Barclay	355	0	0
Boyd Smith	349	4	6
Balls	345	0	0
Leek	335	0	0
Batterby	329	0	0
Brown and Maylin	320	0	0
Radley and Rogers	309	6	8
Redding	282	12	0
Jervis (accepted)	279	13	0

TENDERS

For the erection of a Scotch Presbyterian Church, St. John's Wood; Mr. H. Mawley, architect.

John Morris	£2,397
Wm. Patience	2,279
Jas. Morris	2,269
J. and C. T'Anson	1,885
Geo. Mansfield and Son	1,875

For St. James's Baths and Washhouses, Westminster; Mr. P. P. Baly, engineer.

Jeffery	£8,870
Paul	8,700
Walker and Soaper	8,499
Pollock and M'Lennan	8,488
Higgs	8,470
Piper	8,237
Winsland and Holland	8,194
Hayward and Nixon	8,000
Curtis	7,984
H. W. Cooper	7,922
Sanders and Woolcott	7,892
Myers	7,847
T. Burton	7,839
Trego	7,267

For Chertsey Union Workhouse additions; Mr. John Billing, architect.

	No. 1. Building.			No. 2. Drainage.		
Seal and Jackson, Chelsea	£1,876	0	0	£335	0	0
Cooper and Davis, Southwark	1,750	0	0	475	0	0
Pollard and Symonds, Guildford	1,697	0	0	547	0	0
Richards, Paddington	1,658	8	0	332	0	0
H. and C. Clark, Reading	1,656	0	0	413	0	0
James Loe, Guildford	1,643	14	8	433	10	2
William Kidner, Chertsey	1,640	0	0	400	0	0
James Davis, Camberwell	1,592	0	0	386	0	0
Thomas Lucas, Chertsey	1,590	0	0	385	0	0
Oades and Son, Egham	1,586	0	0	332	0	0*
— Ellis Guildford	1,584	0	0	489	15	0
James Smith, Guildford	1,576	15	0	480	11	0
Joseph Taylor, Sudbury	1,473	0	0	420	0	0
Henry Boxall, Guildford	1,447	0	0	405	0	0
Robert Hunt, Chertsey	1,435	0	0*			

* Accepted.

SCIENTIFIC MEETINGS

Held during the ensuing week.

MONDAY, June 24.—Institute of Architects, 8 p.m.
FRIDAY, June 28.—Architectural Association, 8 p.m.

TO CORRESPONDENTS.

"License."—Is it necessary for an architect who surveys the work he superintends, or when measuring off at the conclusion of his job, to have a *license* for so doing?—It is not considered necessary at the Stamp Office.

"A. and C.," "S. S. M.," "E. M. B.," "R. R. B.," "Mr. B.," "Mr. R. S.," "A Commissioner," "P. P.," "J. C.," "One of the Rejected," "One of the Seventy," "One of the Ill-treated," "One who looks and laughs," "One who has given Seven Hints," "A practical Architect," "A. A.," "A Visitor," "A Victim," "One sacrificed by D.," "W. B." "Equi," "J. J.," "T." "Alias," "J. K." (the statement is not clear); "E. R.," "Unsuccessful Builder," "J. L.," "Obedient Servant," "J. T.," "A. F. S." (we shall be glad to see the drawing), "J. J.," "One with his Eyes open," "W. C.," "C. V." (thanks for good feeling evinced), "J. C. P.," "W. L." (under our mark), "T. C.," "J. W. P." (we shall be glad to see the article), "A. W. H." (we cannot tell without seeing the drawing), "Rudimentary Treatise on Warming and Ventilation," by Charles Tomlinson: London, Weale; "A Continuation of the Memoirs of a Working Man:" Cox, King William-street, Strand; "Lincoln's Inn; its Ancient and Modern Buildings; with an account of the Library," by W. Holden Spilsbury, librarian: London, Pickering; "Practical Tables to facilitate Hydraulic and other Calculations:" Waterlow and Sons, London-wall; "A Plea for the very Poor; being the first general Report by the Committee of Management of the Mount St. Bernard Hospice: London, Nisbett and Co.; "The Civil Engineers and Surveyors' Companion and Assistant," by Ed. Ryde, Upper Belgrave-place, Eaton-square; "Drawing from Objects," by Hannah Bolton: London, Groombridge and Sons; "Agricultural Society's Prize Model Cottages; being the same for which the Royal Agricultural Society awarded the first Prize to Mr. H. Goddard:" London, Deane and Son.

"Books and Addresses."—We have not time to point out books or find addresses.

NOTICE.—All communications respecting *advertisements* should be addressed to the "Publisher," and not to the "Editor:" all other communications should be addressed to the EDITOR, and *not* to the Publisher.

ADVERTISEMENTS.

THE BRITISH (formerly the Architect's, &c.) ASSURANCE COMPANY, 69, LOMBARD-STREET.
CHAIRMAN.—SYDNEY SMIRKE, Esq. A.R.A.
The Rates for both Fire and Life Assurance are as low as can with safety be taken. The Premiums for Life Assurance made payable to suit the convenience of the assured.—Prospectuses and all particulars may be had at the Head Office, or of any of the Agents. JOHN REDDISH, Manager.

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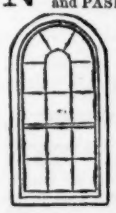

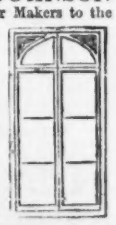

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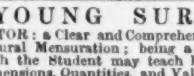
MUIR'S PATENT  PLANING MACHINE.

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KEENE'S and PARIAN CEMENTS, for internal stucco, are employed very advantageously in place of wood for skirtings, architraves, and panel mouldings, and for in-door flooring, instead of stone. The peculiar properties of PARIAN Cement allow of its being painted or papered upon within a few hours of its application, and thus render it an important substitute for common plastering in those cases where expedition and beauty of finish are essential.—J. B. WHITE and SONS, Millbank-street, Westminster, Patentees of KEENE'S Cement, Licensees of PARIAN Cement.

PORTLAND CEMENT, as manufactured by J. B. WHITE and SONS, possesses all the properties of the best Roman Cement, but has the advantage over that material of wholly resisting frost. When used as a stucco it does not vegetate or turn green in damp situations, and requires no colouring. Employed as an hydraulic mortar for brickwork, it carries four to five measures of sand to one of cement, and is proved by trial to become harder and stronger in these proportions than Roman Cement with but one measure of sand. This superior connecting power, combined with its eminently hydraulic properties, point it out as the fittest material for building sea and embankment walls, the lining of reservoirs, cisterns, and baths, and for all those purposes where strength and a perfect resistance to water are required.

Manufacturers—J. B. WHITE and SONS, Millbank-street, Westminster, and 36, Seel-street, Liverpool.

PORTLAND CEMENT, solely MANUFACTURED by WILLIAM ASPDIN, Son of the Patentee.—Messrs. ROBINS, ASPDIN, and Co. request reference to No. 296, page 491; and also Nos. 284 and 285, pages 343 and 351 of "The Builder," for accounts of EXPERIMENTS on the strength of Portland Cements, whereby the great superiority of their Cement is manifest. This Cement has been proved for upwards of twenty years in the Thames Tunnel to resist the action of water; it is stronger in its cementitious qualities, harder, and more durable than any other description of Cement; it does not vegetate, oxydate, or turn green; nor is it affected by any atmospheric influence whatever the climate, resisting alike the action of frost and heat. It is manufactured to set in from five to sixty minutes. For all purposes that Cement is applicable the Proprietors challenge competition.—Orders received by Messrs. ROBINS, ASPDIN, and Company, at their Manufactory, Northfleet, Kent, and their Wharf, Great Scotland-yard, Whitehall; also at their Depôt, 46, Hanover-street, Liverpool.

THE PARIAN CEMENT, for INTERNAL STUCCO.

No. 4, Porchester-terrace North, Paddington, 15th February, 1850.

Dear Sirs,—I have been reluctant to speak to the merits of Parian Cement, until sufficient experience enabled me to do so. As an extensive builder I have given it many trials, and now beg to express my perfect satisfaction with it. The house from whence I date was first inhabited by me on 7th September last, not a brick having been laid before the 1st of June!—that is to say, in three months and one week! I stuccoed the walls throughout with Parian; papered some, painted and marbled others; and the whole work has been dry and perfect from that hour. I need say no more.—I am, Gentlemen, yours respectfully,

WM. SCANTLEBURY.

Messrs. Chas. Francis and Sons, Nine Elms.

MARTIN'S PATENT
FIRE-PROOF AND ORNAMENTAL CEMENT,
APPLICABLE FOR
ALL INTERNAL PURPOSES WHERE PLASTERING IS REQUIRED.

This invaluable Cement has now been before the public so many years, and obtained so high a standing in the estimation of all who have used it, that it is unnecessary to comment on its merits. Messrs. STEVENS and SON however feel called upon to observe, that from the greater extent of surface which a given quantity of MARTIN'S will cover, as compared with other Cements for internal use, there will be found a gain of 16½ per cent. in material, full 7 per cent. less in price, with an additional saving in labour of 10 per cent., by its allowing about forty minutes for working, being less than one-tenth of the time of other cements of a similar nature, therefore worked with greater facility, making together the enormous saving of full THIRTY-THREE PER CENT.; its advantages therefore cannot admit of doubt. Specimens, showing its beauty, hardness, and applicability to all plain and ornamental purposes, may be seen; and the Cement, in any quantity, obtained of Messrs. STEVENS and SON, at their Plaster and Cement Works, 186, Drury-lane, London.—Manufactory, Derwent Mill, Derby.

N.B. This Cement will receive paint or paper in a few hours after the completion of the work by the plasterers.

JOHNS and Co.'s PATENT PERMANENT STUCCO WASH, CEMENT, and PAINT.—The attention of the trade and the public generally is solicited to these very excellent and well-known materials, which, for their beauty, durability, imperviousness, and cheapness, are unequalled. THE PERMANENT WASH, as a substitute for common lime-wash or water-colour, is an article which has long been wanting for stucco and brick-work; it is of a stone colour, but may be tinted to any other; is perfectly dry in twenty-four hours; will not wash off; is very little dearer than the common washes; and, being a non-absorbent, is admirably adapted for railway stations, union workhouses, schools, barracks, prisons, &c. One cwt. is sufficient to cover, with two coats, 250 square yards. THE CEMENT, from the great reduction in price, and its suitableness for internal as well as external surfaces, places it above all other materials of its kind; it has no caustic qualities; may be painted or papered in a few days; never blisters, cracks, or vegetates; soon becomes as hard as stone; and may be cleaned with a brush and water. The merits of the PAINT are well known for its application to stucco work of all kinds, and external work generally. Numerous testimonials, prospectuses, and every information may be obtained, on application to the Sole Agent, PHILIP HARE, at the Warehouse, 22, Steel-yard, Upper Thames-street. A liberal allowance to wholesale dealers.

FUSIBLE MINERAL CEMENT, as used for years on the Continent, for preventing the Ascent of Damp in foundations, covering arches, building reservoirs, cisterns, &c.; as also WATERPROOF SANDSTONE FLAGS for flooring damp cellars, churches, &c. &c., to be had solely of

THOMAS FURSE, 96, High-street, Whitechapel.

Flags, 18 inches by 18, and 1¼ thick, 4*d.* per foot super.
Do 24 " 24, " 2 " 6*d.* "
Cement in barrels of 3 cwt., or less, at 7*s.* 6*d.* per cwt.

N.B. T. F. undertakes to render the dampest cellars, &c. &c. perfectly dry at moderate charges.

BELL'S PATENT LIQUID CEMENT is ready for use, and only one-eighth the cost of oil-paint. For beauty it is pre-eminent, giving the exact appearance of FINE CUT STONE. Can be used at once on fresh Roman Cement, or any other plastering, and will protect the walls as well as Roman Cement. In casks of 1, 2, and 3 cwt., at 8*s.* 15*s.* and 21*s.*, casks inclusive.

PATENT MINERAL PAINTS,

Invaluable for cheapness, beauty, and permanence: not half the cost of other paints, always ready for use, will keep good for years, and therefore well suited for exportation. Brilliant black, 2*s.*; rich browns, 2*s.* 9*d.*; greens and light colours, 4*s.* per gallon.

G. BELL and Co., 2, Wellington-street, Goswell-street.

JENNINGS' PATENT SHOP SHUTTER SHOES and FASTENERS, INDIA RUBBER TUBE-COCKS, and WATER CLOSETS, can be had through any plumber or ironmonger. The only manufacturers are — JOHN WARNER and SONS, Crescent, Jewin-street, and GEORGE JENNINGS, Patentee, 29, Great Charlotte-street, Blackfriars-road.—Descriptive drawings and testimonials sent free on application.

SNOXELL'S PATENT SAFETY REVOLVING WOOD SHUTTERS, Manufactory, 98, REGENT-STREET and 121, CHANCERY-LANE. Patent sealed on the 4th day of February, 1845, for Fourteen Years, for Improvements in Revolving Shutters of WOOD and IRON, consisting of Six Methods of Raising and Lowering Shutters, without Machinery, and Two for Hinging and Sheathing the Edges of Wood Laths with Iron.—The Patentee having fixed up some hundreds, will feel pleased in forwarding the Testimonials of Architects, Principals of large Establishments, and others, having them now in use, which fully guarantees the Patentee in stating they are beyond dispute superior to any other Revolving Shutter for durability, security, and simplicity, without the use of cog-wheel worm and screw gear, or any other complicated machinery employed by other makers.

IRON SHUTTERS.—The PATENT CONVEX REVOLVING IRON SHUTTERS are cheaper, twelve times stronger, work easier, cannot run down, and roll up in one-third less room than any other shutters made. Harcourt Quincey, Patentee.

CLARK and Co., Sole Manufacturers, and of IMPROVED DRAWN ORNAMENTAL METALLIC SASH BARS, ASTRAGALS, MOULDINGS, STALL-BOARD PLATES, &c. &c., in brass, copper, and zinc. Gas Fittings, Chandeliers, and internal Brass Fittings for Shops of every description. WROUGHT-IRON GIRDERS, HOT-WATER APPARATUS, and metal work connected with buildings. Testimonials of architects and others having them in use will be forwarded free on application to CLARK and Co., Engineers, 233, Wapping, London, or to Mr. G. BRIGSTOCK, 17, George-street, Edinburgh, Agent for Scotland.

BUNNETT and Co., ENGINEERS,
Patentees and Manufacturers of
REVOLVING IRON AND WOOD SAFETY SHUTTERS,
and of
ORNAMENTAL SASH BARS, MOULDINGS, STALL-PLATES, &c.,
FOR SHOP-FRONTS, AND OTHER WINDOWS, OR SKYLIGHTS,
IN BRASS, COPPER, ZINC, IRON, &c.

Shop-fronts completely fitted up and glazed with best plate glass Metal works and improved machinery of all kinds for warehouses, banking-houses, &c.

BUNNETT and Co. challenge competition as to either quality or price.

Office, 26, Lombard-street, London; Works, Deptford, Kent.

B. and Co. are also Patentees and Manufacturers of Improved Bench and Flooring Cramps for Builders; Wrought Iron Diagonal Gratings, doubly-trapped self-acting Water Closets, and self-acting and self-cleansing Effluvia Traps, for Sewers, Drains, &c. &c.

HOPKINS and CO., late BARRON and MILLS, WINDOW BLIND MAKERS, and CABINET and UPHOLSTERY IRONMONGERS, 40, CASTLE-STREET EAST, OXFORD-STREET, LONDON, Sole Manufacturers of the Improved Self-Regulating Action for Venetian Shades; a most important improvement, by which the shade is sustained in any position, without the aid of side lines and hooks.

Also, of Improved Roller Blinds, to dispense with centre lines.

Also, of Improved Outside Sun Blinds, for Windows and Hall Doors.

Shop Front Blinds on the most Improved Construction.

Wire Blinds in endless variety.

Inventors and Sole Manufacturers of the Improved Cornice Poles, by which the rings traverse without the least action upon the pole; it is also applicable for the easy carriage of curtains round bay, octagon, or sweeped windows.

Punctuality is a characteristic feature of this firm.

HOUSE DECORATOR and GILDER.— TO ARCHITECTS.—J. M'LACHLAN begs to return thanks to his friends for their patronage during the time he has been in business, and to inform them and the profession generally that he has OPENED PREMISES at 35, ST. JAMES'S-STREET, Piccadilly, as a more central place of business, where he hopes to have their support.

J. M'L., as a practical house-painter and decorative artist, is prepared to make designs, with estimates, for the decoration of rooms; or gentlemen may have their own designs executed with taste and effect. Parisian and English Decorations and Paper-hangings of the newest patterns; Gilding in all its branches, at 35, St. James's-street.

PAPER-HANGINGS by MACHINE and BLOCKS.—The trade supplied in town and country, with machine goods, from first-rate French and English designs, at lowest possible prices. Also block goods, unsurpassable for beauty of design, quality of workmanship, and cheapness of price. All the patterns are original, and can only be procured of Messrs. HENNELL and CROSBY, Queen-street, Southwark-bridge-road, London. Cheapest house for floral and oak decorations, marble and granite papers, &c. &c. Small set of patterns, 5*s.*; returnable off an order of 5*l.*—Terms, cash.

PAPER-HANGINGS at E. T. ARCHER'S Manufactory for English, and Warehouse for English and French Paper-hangings, and all materials connected with the trade. The Panelled Decorations are fitted up on the walls of an extensive range of show-rooms, giving at one view a drawing or dining-room furnished fit for occupation.

LIST OF PRESENT PRICES.

Painted marble, granite, and oak papers	1*d.* per yard.
Superior bed-room papers.....	1*d.* "
Satin ground papers for bed-rooms, drawing and dining rooms.....	3*d.* "
Flock papers on grounds, and crimson flock on oak	4*d.* "
Bronze drawing-room papers	9*d.* "
Rich gold paper	1*s.* 6*d.* "
Ditto and Flock	2*s.* 0*d.* "

10,000 feet of gilt mouldings always in stock.

E. T. ARCHER, 431, OXFORD-STREET, LONDON.
January, 1, 1850.

HORNE'S INDIA-RUBBER PAPER for DAMP WALLS is the cheapest and best hitherto offered to the trade, the price being 2*s.* 6*d.* per piece of twelve yards, and its being entirely free from the unpleasant odour arising from gutta percha and pitch papers, and considerably lower in price, is an important desideratum in its favour.—ROBERT HORNE, PAPER-HANGING MANUFACTURER, 41, Gracechurch-street, City, at the same time invites builders and the trade to inspect his extensive stock of NEW DESIGNS IN PAPER-HANGINGS, which, by the aid of powerful machinery, he is enabled to offer at the following unprecedented prices, in stock quantities, for cash only, viz.:—

Stout lining paper	4½*d*	12 Pieces.
Superior ditto	6*d.* and 7*d.*	
Bed-room papers, in great variety	8*d.*	
An excellent oak paper.....	8*d.*	
Sitting-room ditto, on blended grounds	7*d.* to 9*d.*	
Hand-made marbles	1*s.* 0*d.* to 1*s.* 6*d.*	
Good satin papers	1*s.* 9*d.* to 2*s.* 0*d.*	
Rich flock papers (by a new process) ..	2*s.* 0*d.* to 2*s.* 6*d.*	
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Every novelty in French and English panelled decoration always on hand; also excellent imitation of fancy woods, superior to any hitherto manufactured on paper.

N.B. Patterns sent into the country, showing the style and quality of the above, on receipt of two postage stamps, and the goods despatched with promptitude on receipt of a remittance to the amount of the order given.—Folding screens in great variety, wholesale and retail.—To be obtained only at HORNE'S Wholesale and Retail Establishment, 41, Gracechurch-street, London-bridge.